STRSP0119US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	
	:	
McDonnell et al.	:	Art Unit: 1648
	:	
Serial No: 10/637,149	:	Examiner: Michele S. Horning
	:	
Filed: August 8, 2003	:	Confirmation No.: 3426

For: DECONTAMINATION OF PRION-CONTAMINATED SURFACES WITH PHENOLS

DECLARATION UNDER 37 CFR 1.132 OF GERALD E. McDONNELL

VIA EFS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1345

Sir:

I, Gerald E. McDonnell, declare and say as follows:

(1) I am a co-inventor of U.S. Application No. 10/637,149 ("the present application"). At present, I am Vice President of Technical Affairs and Research for the assignee of the present application, STERIS Corporation. I have worked in the field of decontamination, including cleaning, disinfection, sterilization, fumigation and infection prevention for more than 18 years. Based on my experience and education, I consider myself, and believe my colleagues consider me, to be a person of skill in the art of decontamination, including in particular the development and testing of compositions and processes for use in cleaning, disinfection, sterilization, fumigation and infection prevention, such as that of the present application.

(2) The present application discloses and claims a method of treating a body which is contaminated with infectious prions, the method comprising contacting the body with a composition comprising one or more phenols and an organic

sulfonate to inactivate prions on the body, the one or more phenols comprising: *o*-benzyl-p-chlorophenol; *o*-phenylphenol; 2,3-dimethylphenol; *p*-chloro- *m*-cresol; *p*-chloro-*m*-xylenol; 2,4,5-trichlorophenol; or a mixture of two or more thereof.

(3) The present application includes test data showing that the claimed composition is effective against IFDO, which is an art-recognized surrogate for the highly infective, very dangerous prions. Due to the nature of prions, it is necessary to employ a surrogate whenever possible, to avoid the possibility of infection to personnel in the laboratory environment in which the testing is carried out.

(4) In addition to the danger in handling prions for use in testing the efficacy of compositions and methods for use in decontamination of prions, other tests are either somewhat unreliable or require an extensive amount of time. Accordingly, a surrogate or model for prion decontamination testing is needed. IFDO has been shown to be an effective surrogate or model, as detailed below.

(5) *In vitro* Western blots have been used to detect the presence/absence of the prion protein PrPSc as detected by its resistance to protease treatment and the use of an antibody directed against the PrP protein. It has been published that Western blots are not good predicting methods for inactivation of prions (e.g. Fichet et al, 2004. Lancet **364**: 521-526.)

(6) *In vivo* animal models have been used to test the presence/absence of prion infection in a solution or when contaminated on a surface. The most widely used method uses the prion scrapie strain 263k in sensitive mice or hamsters. The typical incubation time is at least 1 year and could be as long as 3 years.

(7) In order to show that IFDO is a valid surrogate for prions, and that sterilization compositions and/or conditions that are effective against IFDO are equally effective against prions, we have carried out testing as described in the following.

(8) The IFDO assay is carried out as described in the present application, based on the presence/absence of growth, as defined in the present application.

(9) In the following table, A presumed fully effective process (as determined by this method) is shown as + and ineffective as –; partial effectiveness is shown as +/–.

Inactivation Method	**Prion Studies**		**IFDO Studies**
	Western Blot (*in vitro*)	Animal Tests (*in vivo*)	
1N NaOH (20°C, 1 hour)	+	+	+
Steam sterilization (134°C, 18 mins)	+	+[1]	+[1]
Alkaline formulation (Hamo100)			
(1.6%, 43°C, 15 mins)	+	+	+
(0.8%, 43°C, 7.5 mins)	+	+	+
(0.2%, 25°C, 5 mins)	+	+/–	+/–
Hydrogen Peroxide Gas			
(1.5mg/L, 25°C, 3 hours, atmospheric pressure)	–	+	+
(2mg/L, 30°C, 3 pulses at 5 mins/pulse, under vacuum)	+/–[2]	+	+
(6mg/L, 50°C, 4 pulses at 7.5 mins/pulse, under vacuum)	+/–[2]	+/–	+/–
Liquid (60% v/v, 20°C, 15 mins)	–	+/–	+/–
Environ LpH®[3] (5%, 20°C, 30 mins)	–	+	+

Notes:

[1] Periodically shows a negative result, at a low level.

[2] An increase in antibody reactivity is observed.

[3] Environ LpH® contains:

6.4% o-benzyl-p-chlorophenol
3% p-tertiary-amylphenol
0.5% o-phenyl phenol
4% hexylene glycol
12.6% glycolic aicd
8% isopropanol

(10) The above table summarizes a series of studies investigating inactivation methods for prions comparing traditional *in vitro* (Western blot detection of the presence/absence of the prion protein PrPSc as detected by its resistance to protease treatment and the use of an antibody directed against the PrP protein) and *in vivo* (animal infectivity) studies, to the use of the IFDO model. Prion test methods have been previously described by Fichet et al, cited above.

(11) As shown by the above table, in all cases the IDFO model was able to correctly predict the effectiveness of an inactivation process, as demonstrated by its effectiveness when tested in established animal models and by the Western blot. Accordingly, the IFDO model is a valid surrogate or model for prions, and is preferred for use in testing prion decontamination compositions and processes.

I, Gerald E. McDonnell, hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

Respectfully submitted,

24/3/2011
Date

Gerald E. McDonnell
Gerald E. McDonnell